ANALYTIC-SYNTHETIC

II

By Friedrich Waismann

3. More about 'definition' and 'analytic'

I HAVE defined 'analytic' in terms of 'logical truth', and further in terms of certain 'operators' used in transforming a given sentence into a truth of logic. The accuracy of this definition will thus essentially depend on the clarity and precision of the terms used in the definition. If these were precisely bounded concepts, the same would hold of 'analytic'; if, on the other hand, they should turn out to be even ever so slightly ambiguous, blurred or indeterminate, this would affect the concept of analytic with exactly the same degree of inaccuracy. Before proceeding, it will therefore be well to pause and consider these terms more in detail.

I shall first discuss the idea of an operator, and here I shall confine myself to setting out certain difficulties which stand in the way of giving a precise shape to the idea of a definition. Later I must examine the notion of logical truth. I shall try to show that both concepts are more or less blurred, and that in consequence of this the conception of analytic, too, cannot be precisely defined. It is important to make this point quite clear, because it will help us to understand better how analytic statements are applied. To anticipate one result to be established later—it is significant that we do not only " find out " that a given statement *is* analytic ; we more often precisify the use of language, chart the logical force of an expression, by *declaring* such-and-such a statement to be analytic. If ' analytic ' was as fixed and settled a term as, say, ' tautology ' is, this would be hard to understand : can I, *e.g.*, by decree appoint a given statement to the rank of tautology? It is precisely because, in the case of ' analytic ', the boundary is *left open* somewhat that, in a special instance, we may, or may not, recognize a statement as analytic.

What, then, is a *definition*? A definition, it seems, is a licence which permits us to replace a word, or a symbol, by the *definiens*, *i.e.* to translate an expression into a different idiom. When we say this sort of thing, what we have in mind are perhaps *explicit* definitions, *i.e.* definitions *per genus et differentiam*, illustrated by such stock examples as "A planet is a heavenly body revolving round the sun ". And we are perhaps tempted to think that

every definition conforms to this archetype. We are apt to forget that definitions of this kind are of use only in comparatively simple and trivial cases. The more interesting concepts such as truth and falsity, meaning and purpose, cause and effect, intelligence, time, number, which fascinate theorists, elude our efforts to pin them down in this way and only mock such clumsy attempts at defining.

Indeed, it is easy to see that this scheme is far too narrow. What, for instance, about ' recursive definitions ' such as that given for addition?[1] And what about what Russell calls ' definitions in use '? If we are to explain, say, what ' similarity ' means (as used in mathematical logic), though we cannot define the word ' similar ' in isolation, we can explain its meaning in the context " One class is similar to another ". Adopting this device, we are able to define terms like ' mass ', ' force ', ' temperature ', and many others.

What is time? Philosophers since the days of St. Augustine have been pondering over this question. The queer thing is that we all seem to know perfectly well " what time is ", and yet if we are asked *what* it is, we are reduced to speechlessness. Indeed, what *should* one say? That time is ' the form of becoming ', ' the possibility of change ', or some such thing? Wouldn't it be extraordinary if someone, instead of saying, " Don't hurry, still plenty of time " were to say, " Don't hurry, still plenty of form of becoming "? Would it be any better to declare, " Time is measurable duration '? Needless to say this will not do either. So what? We can't help feeling *puzzled* by the question, and we are apt to express this puzzlement in Augustine's words : "What is time? If I am not asked, I know ; if I am asked, I don't ".[2] But what exactly is the difficulty? We know what the word ' time ' means in the sense that we are able (1) to understand it in various contexts (" He has come just in time ", "What is the right time? " " My time is up, I must go ", etc.) and (2) to use it on the proper sort of occasions in the right sort of contexts. But it would not be right to say that we know the meaning of the word in the further sense (3) that we are able to *reduce* its whole immensely variegated use to a simple formula. Knowing how to apply the word in the right sort of way is one, condensing its usage into a single formula, a very different thing.

Here it might be asked : *can* the word be defined? But *why* should I try to find a definition? A definition would enable me to eliminate the word ' time ' from any given context and replace

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[1] See previous article, p. 39.
[2] *Confessions, Liber XI, Cap. XV.*

it by its *definiens*. But it is *just the point* that there exists in English no other word, nor any combination of words which does the job the noun ' time ' does. There is but one word, and no other, to express what I want to express, and that is just the word ' time '. In vain do I look for some paraphrase, or circumlocution, or roundabout mode of expression which can be used *in place* of the word ' time ', though, in *particular* cases, such rewording *is* possible. To give some examples : by this time = now ; a long time ago = long ago ; in times to come = in future ; in time = in good season ; early enough ; behind time = late ; at the same time = simultaneously ; however ; from time to time = now and then ; occasionally ; time after time = repeatedly ; out of due time = prematurely ; too late ; not in proper season ; against time = with all possible speed or haste ; in the nick of time = just at the exact moment ; in no time = as quick as a wink ; time enough = sufficiently long ; no need for haste ; now is your time = now is your opportunity ; had a good time = enjoyed myself ; mark time = make no progress ; time-honoured = venerable by antiquity ; etc. Thus the word ' time ' can in fact be eliminated from a great many phrases ; but the difficulty is to go on with *one* translation *consistently* for all the phrases in which the word occurs, *i.e.* to make the translation hold *throughout*. The fact is that there is no standard translation that can serve to eliminate the word from any context whatsoever and replace it by the *definiens*.

So to answer the question we look into diverse phrases in which the word occurs, spread out before us, as it were, the whole tortuous usage. We connect this word with others, we put it into various contexts, we trace over the lines of its use, and by doing this we convey its meaning. Indeed, if anyone is able to use the word correctly, in all sort of contexts and on the right sort of occasions, he knows ' what time is ', and no formula in the world can make him wiser.

It should be noticed that this is only a *very rough* account of the matter. There is no such thing as a *standard* test to decide infallibly whether, *e.g.*, a child really does grasp the meaning of that word. If the question " What is the right time? " only elicits a blank from him, if he shows not the slightest sign of understanding the most common phrases, we should certainly not be satisfied. On the other hand, we do not require him to know *all* the idioms of speech such as ' in the nick of time ', ' the time of one's life ', ' hell of a time '. But to ask, " In what moment does he catch the meaning? " is like asking in which

moment a man who is learning to play chess turns into a chess player. These are not the right questions to ask.

What, then, are we to say in reply to the question whether a word like ' time ' *can* be defined? We are inclined to say that it can not, and the reason for this, I suppose, is that we think of a definition as a *concise* formula covering the word's use. But we have already seen the infiltration of other types of definitions alongside the explicit ones by which the use of a word is explained in certain specified contexts. As there is no limit to the number of these contexts—a good example of this is the definition of irrational numbers in mathematics—there is no limit to the complexity of the pattern woven by this sort of definition. If such accretions are admitted, why not take a bolder step and include the case we are considering too? Admittedly, that would be a departure from the ordinary (traditional) use of the word ' definition '; but why not stretch this usage?

My object in dealing with this sort of question was not to recommend a way of speaking in which spreading out a word's use may be called a definition, but rather make you see that ' definitions in use ' gradually shade off into more and more complicated patterns, and that it would be unnatural to say, " So far it is a definition and from there on it is no longer ". On the other hand, if a person feels unhappy about extending the use so far, we can also see that there is a point in this. What troubles him is perhaps this that the use of the word *cannot be formalised*. Indeed, the usage of a word like ' time ' is *not only* far more intricate than that of, let us say, ' similar ' (in the theory of classes), but also *irregular, loose,* and above all, *incomplete,* the latter in the sense that new figures of speech may come, and in fact have come, into being (such as ' time is money '), without apparently altering the sense of the word. It is therefore not only *difficult,* but *next to impossible* to tabulate all the phrases in which it occurs. *Its use can no longer be distilled into rules.* The more we attend to this pecularity, the less satisfied we feel with calling such a procedure a definition. Having reached this stage, we are perhaps more inclined to say something like this ; it is true, we can make a person understand the word ' time ' by producing examples of its use, characteristic examples : but what we cannot do is to present a fixed formula comprising as in a magic crystal the whole often so infinitely complicated and elusive meaning of the word. Accordingly, one may perhaps wish to distinguish between ' definable ' in the strict sense, and ' teachable ' (or ' learnable '), thus bringing out the difference just considered,

Incidentally, the fact that one can perfectly well know ' what time is ' without knowing all the idioms of language is a pointer which suggests that all is not well with the doctrine that ' the meaning of a word is the way in which it is used '. Indeed, if that was correct, it would only be natural to expect that the adding of *any* new phrase, when it occurs for the first time, such as ' time is money ', alters something in the meaning of that word ; which is obviously far from the truth. Ask yourself whether you are prepared to say that in learning what a number is one has also to learn the use of such phrases as ' a number of people ', ' a small number ', ' a round number ', etc.? Would it be right to say that, if a child is unfamiliar with such expressions, he does not know what a number is? Such examples should make us hesitate to accept the formula ' meaning = use '.

Let us now go back to the point where we spoke of the variety of definitions, and consider some more examples. What about dictionary definitions? Here some qualms may be felt in letting them pass as definitions. For if you follow up the references in a dictionary, you will sooner or later be turned back to the point from where you started, having described some odd serpentine course through a whole range of related expressions. Such circular definitions are of course inadmissible where logical strictness is required (as in geometry), but they are no blemish in the case of a dictionary ; for it is not so much meant to give definitions as to *remind* the user of a language, who is more or less familiar with a given word, of its more subtle implications, to place it in its natural setting of root and derivatives, and show, where this is possible, its origin in other words and languages, and the stages through which it has passed. Now, going into the etymology of a word is certainly not considered to be the business of the logician who wants to *define* it—evidence that the objects of a lexicographer and of a logician are not the same. Another point which deserves mentioning is that a definition, as we find it in a dictionary, must not be confused with the *assertion* that it is in accord with the actual use of language ; it is rather the fact of its being printed in a *dictionary* which indicates, or claims, that the meaning thus explained is actually the *current* or *prevailing* one. Further, a dictionary only rarely gives the precise equivalent of a word, for even synonyms (as masculine, manly, virile ; leap, jump ; assist, help, aid ; festive, festival, festal ; saint, holy ; polychrome, multi-coloured) usually differ either in context, or in suggestion and emotional overtone. More often a dictionary will give expressions which come as *near as possible* to the meaning of a word without coinciding with it completely ;

sometimes the dictionary will content itself with producing a few characteristic examples of the word's use ; in yet others it will merely comment on the usage. Finally, and this is a most important point, a dictionary supplies lots of *factual information ; i.e.* by consulting a dictionary we can learn many things about the actual word. Thus a dictionary conveys at least four widely different things :—

(1) A declaration as to the meaning of a word, or at least a comment on the way it is used ;

(2) An indication that the meaning given actually attaches to the word in present-day English ;

(3) Observations concerning stem and derivative, the history and etymology of the word ;

(4) Some extra-linguistic information.

Considerations such as these will show that *in praxi* we are using the term ' definition ' much less strictly than in deductive systems such as geometry, or symbolic logic. A very vague usage, however, will destroy nearly the whole idea of analytic. For instance, if dictionary definitions were admitted, almost *every* sentence might be turned into an analytic one, and we should be left with hardly any criterion. What would be the good of doing this? That Aëdes are mosquitos which transmit the virus of yellow fever to mankind, that the Rubicon was crossed by Julius Caesar in 49 B.C., that sulphur is used in the medical treatment of skin-diseases, that the Tübingen school is a school of rationalistic, theological criticism, that Esperanto was invented by Zamenhof, that Emma Albani was a Canadian soprano, and that there are nine grades of mandarins—all these might with some justice claim to be analytic, since they could be learnt from merely looking up dictionaries. It is plain that at least *some* restriction of the term's use will have to be adopted, or else any distinction will become lost in a haze of indeterminacy. For this reason we shall have to preclude dictionary definitions. (Further supporting grounds for this will be given later.) But how exactly are we to regulate the use of the word ' definition ' ? May we, for instance, include in the concept what is sometimes called ' implicit definitions ' such as the axioms of geometry? May we also include *non-verbal* types of explanation—such as pointing to an object and pronouncing its name ? If not, why not ?

Consider for a moment the last point. Suppose you say that ' ostensive definitions ' are not to be admitted, because they are not definitions in the proper sense. Very well then ; there is, unless I am mistaken, no argument to force you to accept

them, nor would I attempt to give one. All I intend to do is to invite you to look carefully at such acts of pointing and notice in which respects they are alike and in which respects they are unlike verbal definitions. Obviously, pointing to something, say, a sample of beige, *helps* you to understand what ' beige ' means ; in this respect, the act of pointing at an object, together with pronouncing the word, is no doubt very similar to a definition, similar to the *job* it performs : it enables you to *apply* the word on later occasions ; for *without* such previous explanation you would not have been able to apply the word as you do. So one cannot dispute that there is a connection between the understanding of the word and the act of pointing. Further, an ostensive definition is like a verbal one in that it is a *precept* which in application can be *followed*, or *broken,* and that it may be referred to in order to *justify* the word's use. In short, like an ordinary definition it has an explanatory, prescriptive and justifying force. On the other hand, pointing does not go far enough : precisely the *same* act of pointing may be used in explaining words of different meaning : if I explain, say, the name ' Venus ' by pointing to a certain star, the same gesture might *also* be used in explaining the name ' morning star ', and yet the two names, though they refer to one and the same object, are by no means synonymous. Thus I may point to a certain bright star in the evening sky with the words " That's Venus ", but if I were to say instead " That's the morning star ", circumstances being the same, I should be mistaken, for this is contrary to the use of language. Another example : ' That is blue ' (pointing to the sky) and ' that blues ' (imitating German) ; in spite of the same act of pointing, ' is blue ' and ' blues ' do not have exactly the same meaning. What such examples show is that an ostensive definition, unlike an ordinary one, leaves part of the use unsettled ; it explains *something*, not *everything*. Nor is this the only difference. In explaining a word like ' beige ' by pointing at a certain colour sample, we pass beyond the bounds of word language and connect the word with something in reality, in contrast to a verbal definition which remains entirely within word language. Besides, a sample is very unlike a word : I may, say in painting, copy from a *sample* of beige, not from the *word* ' beige '. The *word* is an adjective, and it is borrowed from French : but to say of the *sample* that it is an adjective or borrowed from French would plainly be absurd. But the most important difference is perhaps this that an ostensive definition can no longer be used as an *substitution licence*. If someone explains to me the name ' John ' by pointing to a certain man,

and later writes in a letter " John has died ", I cannot re-write this sentence by taking the word ' John ' out of it and putting the real John there. (But remember that a recursive definition, too, cannot be used as a substitution licence). It is a consequence of this fact that ostensive definitions cannot be transformed into equivalences and handled in making inferences.

In comparing the two kinds of definition, verbal and ostensive, we thus come to see the features in which they agree and those in which they disagree. If we look at *some* of them only, we are inclined to assimilate ostensive definitions to verbal ones ; if we attend to the others, we are disposed to declare against assimilating them. But the way out is clear. In asking this question—are ostensive definitions really definitions?—it looked as if we were confronted with a formidable problem. But once we see that the question presents a *conflict*, two sets of forces pulling in opposite directions, we are no longer tempted to seek after " the right answer ". All we do is to show anyone who is puzzled by this question that he must make a choice. At, first he was *ignorant*, finally, after the features of the case have been set out as fully and clearly as possible, he may be *irresolute about what to say*. We may then help him to come to a decision by drawing his attention to the advantages and disadvantages that are likely to accrue from either choice, but *we don't decide for him*. That is the sense in which it may be said that our method of doing philosophy is *entirely undogmatic*. No-one can agree or disagree with us, because we abstain from making any assertion.

Suppose, however, for the sake of argument, that you declare *for* including ostensive definitions in your concept, then the next step is to direct your attention to the enormous variety this form of explanation can assume. You may point to a person saying, " That's John " ; but can you in the same way point to a colour, to a length, to a cardinal point, to a tone? Yet there are obvious similarities between these examples. Thus you may span a length with two fingers and say " That is an inch " ; or you may, while a tone is sounding, or standing forth against a background of others, call attention to it with a gesture, *e.g.* motion for silence, and say, " Listen, that is top C ". You may even point to a group of things whose number can be taken, in at a glance, or make a ring round them with your hand, and say " Look, two apples ", " Three nuts ", etc. (This is a way in which children may in fact come to learn the first few numerals.) Again, you may say " Give me the apple *and* the pear ! ", accompanying the words with a sort of collecting gesture, or " Will

you have the apple *or* the pear? " and present the other with a choice in a gesture. Do these gestures explain the meaning of ' and ' and ' or '? Difficult to tell ; they *help*, anyhow in part, the other person to understand these words. So far may one speak even of an ostensive definition of a number, (if it is small), or of a connective.

Pointing to a red piece of paper and pronouncing the word ' red ', can be misunderstood in various ways—another may take the word to mean ' red ', ' brightly coloured ', ' oblong ', ' paper ', ' smooth ', ' shining ', ' thin ', or even ' this direction ', and so on. But if I say " This colour is red ", the mention of the type of word, ' colour ', prevents such misunderstandings. Another point : compare the expressions " Red ", " That's red ", " This colour is called red ", each expression being accompanied by a corresponding gesture. The first is the sort of thing we may say to a child in teaching him the rudiments of language ; and indeed, the explanation *is* rudimentary. Only the last is the articulate ostensive definition we give to adults. The first is perhaps more properly called a step in a process of training, or drilling the child, *i.e.* in generating in him a certain language habit, not so different from a conditioned reflex. We feel that pointing at an object and uttering the word ' red ' is somehow incomplete. We are inclined to say that this act leaves out the essential feature of a definition. What is essential seems to be the *semantic* relation of the word to the object which, in the fully developed form of the definition, is expressed, *e.g.* by the words ' *is called* red ", or ' red ' ' *means* ', it ' *designates* ', ' *indicates* ', ' *denotes* ', ' *stands for* ', ' *refers to* ', ' *is the name of* ' this colour. These words, it seems, have a definite meaning, and it is *this meaning* which makes the connection between the word and the object. If we ask what inclines us to take such a view, one possible reply is as follows. If I say to a Chinaman " That is blue " and make a corresponding gesture of the hand, he may understand " Destroy this object ! " So the sound of the spoken words, the gesture and the object are not enough to express the ostensive definition. What is still missing is the *sort of connection* between the word ' blue ' and the object signified. This connection is expressed by the word ' means ', ' designates ', etc. as listed above. It seems that the other person has first to *understand* these words in order to grasp that the whole process is a *definition*. In the crude form which we give to a child these words are omitted. We simply say " That's blue " without explaining that this is meant as *definition*. That's what makes the procedure look incomplete. We may perhaps say that the child must first

be trained mechanically without understanding the process, and that from this indistinct haze a clear idea of what an ostensive definition is will later develop. Accordingly, we must distinguish between more primitive and more developed forms of ostensive definitions, without however, being able always to specify precisely the point where ' training ' ceases and ' definition ' begins. This, then, is a further indeterminacy to be found in the idea of an ostensive definition.

Nor is that the end of the matter. What a ' tickle ' is cannot be explained by pointing to one, and a verbal definition is hardly the sort of thing that is wanted. What we do in such a case is to tickle a child and say " Now you feel what a tickle is like ". As Peirce says in regard to the word ' lithium '[1] : " The peculiarity of this definition—or rather this precept that is more serviceable than a definition—is that it tells you what the word ' lithium ' denotes by prescribing what you are to do in order to gain a perceptual acquaintance with the object of the word ". Similarly, I can't point to an after-image, but I may instruct a person what to do in order to obtain one. The same goes for a ' musty smell ', a ' sensation of giddiness ' or ' having a lump in one's throat ' a ' singing in one's ears ', ' pins and needles in one's legs ', etc. And what sort of explanation is it, if a doctor invites you to look through a microscope, saying " Look, that's the germ which causes tuberculosis "? It is not a verbal definition, and it is not quite the sort of thing usually called an ostensive definition. He offers you a chance to have a look for yourself. There is a vast variety of procedures more or less similar to the last one—use of illustrations, photos, models, films ; use of projected stereoscopic images in natural colour for anatomical demonstrations ; use of geographical and astronomical maps and globes ; clinical demonstrations of patients ; tuning forks ; producing of musical themes to illustrate some technical term ; use of lantern slides in lecturing on architecture or plastic arts ; and so forth.

Different again is the case of what is called *déjà vu, i.e.* that sudden feeling which sometimes sweeps over us of " having been here before ", as if at some indefinite past time in just this place, we were saying |just these words. The description in words does not quite convey the strange, unreal quality of that experience, and yet it is not in my power to evoke it at will, or to instruct someone else what he is to do in order to procure it for himself.

Again, consider this case. A traveller who has been to

[1] Collected Papers, 2.330.

some South Sea Island wants to explain a term used there by the
natives. He will first try to translate it ; but suppose there is no
word in English, or in any European language, to express
precisely the meaning of that native word ; what then? He will
have to proceed differently : he may first introduce us to the
specific customs, traditions, ceremonies, magical rites of those
islanders, and initiate us in their social order and their beliefs.
He may then proceed to explain the meaning of that word by
giving us a detailed account of the way the word is used there by
the natives, embedding this usage in the whole culture of those
people, *e.g.* presenting the rôle it plays in their ceremonies,
festivals, etc., in short, making us see it against the background
of their tribal customs and beliefs. Explaining the meaning of
such a word can no longer be severed from depicting the life of a
primitive community. (Something of that is also true of our own
language, only that it is we ourselves who supply most of the
background).

Thus we see that there are a good many procedures, similar
in some respects, very different in others, which may be called
verbal definitions, and a great variety of others which may be
called non-verbal definitions (or explanations). Each of these
groups is made up of widely different types. Even if we single
out one special type such as ostensive definition, on closer
inspection it seems to lose its unity and tends to fray out into
different individual strands. In calling attention to such widely
different cases, it is not my object to show that we do *not yet*
know where the boundary around them runs, but on the con-
trary to show that it is pointless to seek for one. True, we *could*
draw the line somewhere, but *any* drawing will in the end be
arbitrary.

Before leaving this subject, it will be well to consider a
further question. Do ostensive definitions (if they are admitted)
give rise to analytic statements? We may be tempted to answer
that they do. When we ask ourselves what inclines us to take
such a view, we may perhaps think of some such example
as this. A metre is defined as the length of the standard metre in
Paris. Consider now the sentence, " The standard metre is
1 meter long ". Owing to the definition laid down that means
" The standard metre has that length which is possessed by the
standard metre ", *i.e.* " The standard metre has the length it
has ". This statement, we are inclined to say, is *true by ostensive
definition*. To cite a somewhat similar case, suppose that the
colour red was extremely rare and that a piece of standard red
was on that account always kept under glass and exhibited in a

museum. We can imagine that people on Sundays go to the museum, point to that treasure behind the glass and say reverently, " Look, that's pure red ". That may be taken in two senses —as an ostensive definition of ' red ', or as the statement that the object is *in fact* red. Now if the word ' red ' is *defined* by reference to the standard, the latter statement is to be construed as saying, " This object has the colour red, and red is defined as the colour of this same object ", which boils down to saying " This object has the colour it has ". Here again it might seem natural to say that this statement was true by ostensive definition.

Mr. A. Pap, in an article previously quoted,[1] seems to take this very view. "An existential statement ", he writes " may be regarded as a condensed version of a logical sum of elementary statements . . . that is ' $(\exists x) F(x)$ ' is short for ' F (a) or F (b) . . . or F. (n) ', where $a, b, \ldots n$ are objects that may have the property F. Now, each of the logical summands (alternatives) is a merely probable statement, since there are empirical data . . . which might falsify it . . . If, on the other hand, at least one of the summands should turn out to have the character of an ostensive definition, the existential statement would not be a dubitable empirical hypothesis, but would be analytic in the sense of being *true by ostensive definition* . . . Consider . . . the statement ' there exists at least one rod which has exactly the length of 1 meter '. This statement is equivalent to the logical sum ' either a is one meter long or b has that property . . . or n has that property ', where the series $a \ldots n$ includes all the rods in the universe. Now, with respect to $n-1$ rods in the universe it is, indeed, a question of *fact* whether their length is or is not exactly 1 meter. But if the expression ' 1 meter ' is to have any meaning at all, one rod in the universe must have the predicated property by ostensive definition (this is, of course, the standard meter) ; hence the above existential statement is analytic in the special sense of being both significant and true by ostensive definition ". Similar considerations lead him to take an analogous view with respect to saying ' there are red surfaces '. As the word ' red ' is significant, there must be at least one red surface (or patch), by pointing to which the meaning of ' red ' can be explained. Now to say of *this* surface (or patch) that it is red must again be analytic, *i.e.* true by ostensive definition ; hence the existential statement " there are red surfaces " must be analytic too in the same special sense.

The crucial point in this argument is that in both cases a certain statement is claimed to be true, not on empirical evidence,

[1] " Indubitable Existential Statements," *Mind*, 1946.

but in virtue of ostensive definition. Now there is obviously something very queer about this account. First, and this is to be no more than a hint, the logic of the argument can plainly be followed even by a blind man who is entirely unacquainted with the colour red and therefore in no position to grasp the content of any ostensive definition of this sort. That tends to show that the ostensive definition is quite irrelevant, that it does not really enter into the argument. This is borne out if we consider how the ostensive definition is supposedly applied. A definition, a *verbal* one, is an operator which can be used to transform a given sentence. But how exactly is the *ostensive* definition used? Where does its *transforming* function come into play? There is plainly nothing in any of our examples which corresponds to such a performance. Indeed, what matters is, *not* the connection between the *word* ' metre ' and the *actual* standard in Paris (which is made use of, for instance, in adjusting measures), or between the *word* ' red ' and the actual *specimen* of the colour (which is made use of in applying the word in speech), but solely the *verbal description* of this connection. It is only the latter which is needed to transform any of these sentences into truisms. That is why a person who has never come across a metre or never seen the colour red can still argue that the standard metre has the length it has, or that the sample has the colour it has. So what is really needed in transforming any such sentence into a truism is no more than a *verbalization* of the actual process of the ostensive definition. This verbal description however, *cannot take the place* of the definition itself, *i.e.* it cannot act *in lieu* of the definition. If that were so, it would be the easiest thing in the world to make a blind man understand what white is simply by telling him that it is the colour of snow ; which is too good to be true.

What fosters the confusion is the ambiguous way we use such words as ' explain ', ' define ', etc. Suppose, for instance, I want to explain what ' musty ' means. This I may do by telling someone, " A ' musty ' smell is one which you experience in damp and long-shut cupboards ". Now what, is this, *a verbal explanation* which permits replacing ' musty ' by any such circumlocution, or a *precept* which instructs you what you are to do in order to gain such an experience? Plainly both can be meant, *i.e.* either is the sort of thing which would normally be *called* an *explanation* to the illusion that there are analytic statements which are true *in virtue* of ostensive definition. If Pap claims that certain of his statements are " analytic in the sense of being *true by ostensive definition* ", and observes that this " kind of analyticity is

just as deserving of the philosopher's attention as the more familiar analyticity that is possessed by statements which are true by *verbal* definition ", he is clearly wrong. For what he says makes it look as if *ostensive definitions and verbal definitions were used in a precisely parallel way*, a blunder the origin of which has just been exposed.[1]

I think that I have now given some of the reasons why we need not concern ourselves with ostensive definitions. I do not mean to prejudge the question whether they *are* definitions, or depreciate their value. For certain purposes they should, perhaps, be recognised as definitions. All I want to say is that, as they do not give rise to a specific class of analytic statements, we may, in what follows, safely disregard them and concentrate on verbal definitions only.

To be continued.

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THE PHILOSOPHICAL DENIAL OF SAMENESS OF MEANING

By C. D. ROLLINS

TWO writers have recently urged the readers of this Journal to leave off supposing, and to give up saying, that two expressions ever have the same meaning. First, Professor Nelson Goodman has argued that no two *words* ever have the same meaning, because he believes that there is only one satisfactory criterion of sameness of meaning and that this one criterion must lead to such a view, as well as to the supposed corollary that " no non-repetitive statement will be analytic "[2]. Then Professor Richard Rudner, accepting Goodman's argument, has tendered conclusions which are still more drastic, namely that not even two different occurrences of the *same* word can have the same meaning, and consequently that " we can no longer correctly speak unrestrictedly of analytic statements " at all.[3]

One might expect such claims to be meant only as pleasant exaggerations or caricatures. But these are not so intended.

[1] Even if Pap's account is amended in this respect, it does not follow from the fact that the word ' red ' is significant that there *exist* objects to which it is correct to apply that word. See a note by Mr. C. D. Rollins. "Are there Indubitable Existential Statements? ", *Mind*, 1949.
[2] 'On Likeness of Meaning,' ANALYSIS, 10 : 1, October 1949, pp. 1–7.
[3] 'A Note on Likeness of Meaning,' ANALYSIS, 10: 5, April 1950, pp. 115–118.

They are advanced quite literally, quite seriously. They are intended to *correct* our ordinary way of speaking, as if we had been backward and careless. Hence though they might serve for a joke as suitably as many another philosophic doctrine has done, they seem to call nonetheless for a serious appraisal.

Such an appraisal I am here undertaking, although with some feeling of distress. For if on the one hand I understand these claims correctly, they cannot possibly be true but instead have arisen from confusion ; while if on the other hand I do not understand them after considerable effort to do so, then something would appear to have happened to the English language in which, presumably, this Journal is published. I am not at all confident that I do in fact understand them. But I wish to state the difficulties which would naturally be seen in them, so that if their advocates wish to maintain them, here at least will be some indication of how the claims might have to be clarified.

First of all, consider merely Professor Goodman's claim that no two *words* ever have the same meaning. Now it is perfectly obvious that we often say, understand, agree, prove and disprove such a thing as that two different words have the same meaning. Sameness of meaning is something which two words can have and often do have ; and indeed if this were not the case there could be no point in saying that they never do. If it were not correct usage ever to say (truly) that two words have the same meaning, it would surely be nonsense for Goodman to say that they *never* do ; for if his statement were literally true, there would never be, nor ever have been, a true application for its negation, and hence no *use* for the latter and consequently no use for the former. Clearly the expressions ' same meaning ' and ' not same meaning ' work and apply and have sense only as opposites, and any respect in which the former is conceived categorically not to have application to *any* past or present or future instance, is a respect in which the latter expression likewise must be conceived to have no application. (We might say that Goodman has violated the principle of non-vacuous contrast, which might be expressed : " The contrast implicit in the definition of an expression, cannot be vacuous "[1]). Goodman has the air of presenting us with two expressions, ' same meaning ' and ' not same meaning ', both having sense, and then of finding, as a result of investigation, that the latter applies always and the former never. But since the class of instances for which this

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[1] This truistic principle applies to practically everything we ever call a word, and not merely to obvious contrast-expressions ; since if an expression has a use or has sense, it draws a contrast at least implicitly. The principle could also be put: There could not be such a thing as an expression occurring significantly only in tautologically true statements.

result is supposed to hold is *universal*, the supposed result is impossible, as established usage warns us. There is apparently a temptation to think that ' No two words ever have the same meaning ' is like ' No two men ever have the same finger prints '. But a crucial difference is that in the latter case it is unnecessary that two men should ever have the same finger prints in order that we can attach sense to ' same finger prints '.

Briefly speaking, then, the very sense of Goodman's claim makes it false ; and its truth would render it senseless. And since an assertion in English purports to be intelligible more basically than it purports to be true, we can reasonably choose to call Goodman's assertion intelligible but false.

But perhaps this criticism will be regarded as too naive. Perhaps it will be urged that there *can* be both sense and truth in Goodman's assertion, and that it does *not* violate the principle of non-vacuous contrast, on the ground that it amounts only to saying that the respective workings of two different words are *not so much alike as the respective workings of two occurrences of the same word ;* so that ' same meaning ' acquires its sense (and truth) from the latter kind of case, but happens to become false in the former.

But this still will not do. For it remains quite plain that we *do* often say, understand, agree, prove and disprove, upon occasion, that two different words have the same meaning. And if for this job we did not use ' same meaning ', how would it be any better to use instead the expression ' similar meaning ' or ' like meaning ' as Goodman recommends? Is it really believed that there is a widespread confusion which the innovation would remove?

Indeed would not the innovation *create* confusion? Would it not obscure the fact that normally when we assert that two words have the same meaning we are asserting the same *kind* of thing about their respective occurrences in some contexts or in a particular context, as by the same terminology we should be asserting about various occurrences of the *same* word? Is it not obvious that particular occurrences of different words may be, and often are, as closely related as two occurrences of the same word? Is not this fact the very foundation of synonymity? Even if we were not clearly aware of this fact about language as we actually use it, is it not obvious enough that two different words could be *invented*, whose occurrences were so related, and that this would not be anything linguistically bizarre?

Yet philosophical arguments are especially subject to surprising ingenuity in further defence ; and it is in philosophical

character, so to speak, that the above claim should be supported by a further and more radical step—by the claim, i.e., that not even two occurrences of the *same* word can ever have the same meaning, since these can never be related to each other as, say, the two members of an " identical pair ". And we do, in fact, find such a claim very strongly suggested, and apparently made, in Rudner's remark : " it would be absurd to claim for a numerically identical " pair " of things that a predicate which was applicable to one of the " pair " was not applicable to the other " (p. 117).

The full argument now would be, that no two *words* ever have the same meaning, because even though they be related as two occurrences of the *same* word, even these latter never have the same meaning, because they in turn are never related as two members of an identical pair.

But in this form the argument is no better than before. First, it would still mislead about the familiar fact that two words often have the same meaning and that it is often correct to say that they do. (A theory which persists in this way in misleading, usually has its very genesis in confusion). Second, the new and more radical step does not save the theory, for if there is to be any sense in the kind of relation which two members of an identical "pair" have to each other, then this kind of relation may hold and sometimes *must* hold between two occurrences of the same word. The theory can get under way only if there be sense (and sometimes truth) in saying that two *somethings* have the same meaning. And if two somethings do, how can it reasonably be said that two occurrences of the same word never do? Rudner considers a commentator's two marks ' triangle ' and ' triangle ' each referring to the same occurrence of the word ' triangle ' in a sentence under comment. He grants that the former do have, and must have, the same meaning. But it is not very difficult to see that these two marks, which thus admittedly have the same meaning, are two occurrences of the same word.

Thus it would appear that the claims against sameness of meaning, both by Goodman and by Rudner, are mistaken. They conflict with the plain facts of understood usage. Only by this conflict do they become very interesting ; but by this conflict also they happen to be made false.

Thus too is made clear how mistaken are the corollary claims that no non-repetitive statements are analytic, and that there are no analytic statements at all. The claims are mistaken because they rest upon a misunderstanding about what analytic statements are and how they work. Analytic statements do not pretend to be

statements in which two expressional occurrences are really one.

Granted that the claims examined above are false, it would be something of a paradox if Goodman's basic argument yet were cogently argued. I now wish briefly to show that his argument cannot be accepted.

My first point is that it fails to show that the old and familiar criteria for sameness of meaning are unsatisfactory. In his opening paragraph Goodman writes :

" Under what circumstances do two names or predicates in an ordinary language have the same meaning? Many and widely varied answers have been given to this question, but they have one feature in common ; they are all unsatisfactory."

He then considers examples, concluding that there is something wrong with the criterion under scrutiny in each case. But on what grounds does he draw this conclusion? In nearly every case, it will be observed, his conclusion is drawn on the basis of one or more of these three assumptions : (1) that a criterion is no good unless we can actually give a definition (and a not even remotely circular one, at that) for every term in its formulation ; (2) that a criterion is no good unless it leaves no undecided or borderline cases ; (3) that a criterion is no good unless it accounts for *all* the senses or uses in which ‘ same meaning ’ is understandably employed. Thus in his third paragraph he rejects a criterion on the grounds of (2); in his fourth he rejects one or rather several on the grounds of (1) and (2) ; in his fifth, he again rejects one or several on the grounds of (1) and (2)—as well as on the grounds of what appears to be an equivocation upon ‘ possible ’ (cf. ll. 16, 20, 22) and ‘ cannot ’ (l. 31). And in apparently every case, he operates on the grounds of (3) also (notice how one criterion " gives way " to another, and so on).

It is of the very first importance to recognize, unless we wish to entertain hypotheses irrelevant to actual language and therefore of very little interest to us, that *no one of these three assumptions can be granted.* There is no good reason to hold any of them. Assumption (1) is false because understood usage is not, and need not be, in any readily apparent way comparable to a complete and single formal system ; obvious syntactical irregularity and gappiness are not defects. Assumption (2) is false because not all expressions in understood and therefore legitimate usage are dichotomy-expressions ; for many, including ‘ same meaning ’, are members of pairs which do not dichotomize so much as they make contrasts between polar opposites or extremes, and usually only in one or more aspects out of many, rather than

comprehensively. Assumption (3) is false because 'same meaning' in received and understood usage has many different senses.

Even if (1) and (2) were overlooked, assumption (3) would be fatal in itself. When Goodman writes of the old familiar criteria that 'they are all unsatisfactory', it is well worth protesting that *many* are satisfactory. You might as well say that there aren't yet any satisfactory dictionary definitions for ' market ' or ' star ' or ' true ' because for none of these words is there a single definition which reflects all of its uses. You might as well say that there are therefore no satisfactory dictionaries, and that language as now recorded in them is not at all satisfactory and that we ought to have something far better!

If an expression functions in different senses—or in a family or whole clan of different senses, as most of them do and all of them are capable of doing in understood discourse—then what could be more certain than that no one definition or criterion will do for all of them? If a satisfactory one is one which will do for all, then of *course* no one is satisfactory ; and to know this we need scarcely bother to consider any of them in detail. We need only use the word ' satisfactory ' in a very curious way.

Can Goodman suppose that there *might* be an all-in-one criterion? What reason could there be? Is it that he believes he has in fact found one? But my second point is that even if the foregoing parts of this discussion be ignored, Goodman's criterion of " primary and secondary " extension may still be shown to be unsatisfactory.

This is the criterion, it will be remembered, according to which we may judge that e.g. ' triangle ' and ' trilateral ' differ in meaning because, although allegedly they do not differ in extension, yet they differ in secondary extension in the sense that *there can be found* for them *at least one pair* of similarly formed compounds, e.g. (*a*) ' triangle-description ' and (*b*) ' trilateral-description ', which do differ in extension since ' triangle ' is included in the extension of (*a*) but not in that of (*b*) and ' trilateral ' is included in the extension of (*b*) but not in that of (*a*).

Now I have had great difficulty in following Goodman's explanation, and perhaps I do not understand him. But it would seem natural to ask him how, if ' triangle ' and ' trilateral ' do not differ in extension, it may yet be said that ' triangle-description ' and ' trilateral-description ' *do* differ in extension. The answer would apparently be that by ' description ' is meant something very nominalistic like ' mark consisting of or including the *mark* ' triangle ' (or ' trilateral '). But if so, the criterion clearly gives wild results because, unless still further

qualification be added, it would make 'TRIANGLE' and 'triangle' differ in meaning because 'TRIANGLE-description' and 'triangle-description' have different extensions; and likewise would make 'toffee' and 'toffy' differ in meaning because the extension for 'the expression 'toffee' in Webster's' is not the same as that for 'the expression 'toffy' in Webster'. Indeed, as Goodman has formulated it, his criterion might well allow for the results which Rudner gives it,[1] as well as the result that the expression 'centaur' at the beginning of a certain line in your copy of ANALYSIS, would not mean the same as 'centaur' at the same place in my copy of the same issue; or again the result that if I mistakenly wrote a word twice in succession in a sentence, I should have to study carefully which to strike out.[2]

How does a view like Goodman's come to be offered? Although this question is indeed a causal one, and may therefore seem extraneous to philosophical analysis, which in many respects is essentially a logical task, yet the question usually has to be considered. For in general the *sources* of a puzzling thesis —including not only logical and verbal confusions but also general feelings which are recognizable and natural in the case —have an informal or commonsense bearing upon one's interpretation of what the thesis really is. To see the sources is to test one's interpretation. It is a question, not about anybody, but about a doctrine as held by people. It is not too hazardous a question, because it is not avoidable.

For a thesis like Goodman's, then, one might reasonably suggest a complex of sources, which easily combine and which have been very powerful historically. I can only sketch them briefly; I think anyone can find them for himself in Goodman's paper.

One source would seem to be a fear of tolerating transcendental entities, and hence of being committed to intolerable

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[1] It is not at all clear that Rudner's claims are a *consequence* of Goodman's argument (as Rudner asserts p. 116, l. 23). Though it is indeed an extension, it would not be a consequence unless Rudner's argument employing the symbol 'SP5' (p. 116, ll. 30–40) were recast, as perhaps it could be, in strict conformity with Goodman's notion of *similarly-formed compounds*.

[2] Goodman's extensional criterion is also rendered of dubious relevance to our ordinary uses of 'same meaning' by being tied to an unusual and misleading use of 'same extension', according to which, two expressions have the same if they both have none. On p. 4 he writes: "Since there are no centaurs and no unicorns, all unicorns are centaurs and all centaurs are unicorns". Now if you were an atheist you might say, "The three parts of the Trinity are all the same to me"; but who would pass from saying that the null class had members—and that all its members were the same because there weren't any—to saying that centaurs are unicorns and vice versa? Clearly the null class has broken out of its academic cage and is prowling the streets looking for all the world like an ordinary class (masking its class distinction) and is even mistaken for centaurs and unicorns.

ignorance which in principle can never be cured. Without assuming this fear (which by itself is unimpeachable) I do not see how a number of phases in Goodman's argument can be comprehended—especially those which are most severely nominalistic and reductivist.

Another source would seem to be a confusion of ' Do we know how to use expression X? ' with ' Do we know how to describe our use of it? '—a confusion against which Moore, for example, has often warned. If this confusion were not a factor in Goodman's argument, why should there be so much interest in getting a description or rule for applying ' same meaning ' and its negation?

Another source would seem to be the confusion of language with a calculus. In Goodman's paper (and Rudner's also) there seems to be the notion not simply that language is *comparable* to a calculus (as in particular passages or fragments) but also that language somehow *is* a calculus, even in its apparent features. Or to put the same thing in another way, there seems to be the notion that the understanding of ordinary language depends really upon manifest syntax alone. Thus it is easily supposed that in understood discourse an expression in all its occurrences ought *manifestly* to conform to a single rule. This notion, in which I think no one actually believes, in real life, is perhaps an occupational disease of the logician, for in logic, relative to symbols in a system, a corresponding principle is indeed essential.

These sources tend strongly to combine. Thus it is easy and common to suppose that we are liable to commit the unpardonable discursive offense of talking nonsense, especially of talking transcendental nonsense, unless we regularize the expressions of ordinary language, and have for each a single comprehensive rule.

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WHITEHEAD AND RUSSELL'S THEORY OF TYPES
A REPLY

By Martin Shearn

IN a recent paper[1] Mr. J. J. C. Smart claims to have discovered confusions in Whitehead and Russell's symbolism which vitiate their theory of types ; the failure of other philosophers to notice these confusions he explains by the fact that the symbolism contains patterns which look like those they come across when doing mathematics. My purpose in this

[1] Analysis, Vol. 10, No. 4, p. 93.

note is to show that his claim is unfounded and, *a fortiori*, that his explanation is unnecessary.

Mr. Smart professes that he cannot understand how a propositional function of a propositional function of individuals can be constructed. "When," he says, "one does try to think of concrete examples one finds it more and more difficult to understand how there could be a hierarchy of types in Whitehead and Russell's sense."

If he finds it difficult to think of examples he has only to consult *Principia Mathematica*, where he will find the rules according to which functions are constructed and examples of functions of different orders.[1] Among the examples of functions of individuals are the following—all possible values for the function 'f(ϕ!x)':

$$(x).\phi!x, \quad (\exists x)., \quad \phi!x, \quad \text{and} \quad \phi!a \supset \phi!b$$

where '*a*' and '*b*' are constants. There is nothing mysterious about these examples ; the second, for instance, may be read as 'Something is ϕ' and among its values are the propositions "Something is human" and "Something is mortal".[2]

Mr. Smart is mistaken, then, in denying that it is ever possible to interpret functions of functions of individuals. He makes this mistake, I think, because he fails to notice that Whitehead and Russell do not always use the term 'function of functions' in strict analogy to the term 'function of individuals'[3] .When (as most often) they use the term 'function' in such a way[4] that a function is an *expression*, a function of individuals is then an expression from which we may obtain a proposition by substituting for its variables names of individuals, whereas a function of functions of individuals is an expression from which we may obtain a proposition by substituting for its variables, not names of functions, but functions themselves. Since he fails to notice this, he demands that a value of a function of functions should assert something of a function in the same sense that a value of a function of individuals asserts something of an individual. Hence he asks the misleading question : "What could we say of the propositional function 'x is a man'?" which can only have the answer that he gives : What we say must be not of the form 'F(x is a man)' but of the form 'F('x is a man')'.

I find Mr. Smart's objections to the ramified theory of types difficult to understand and my interpretation of them may not be correct. He writes :

[1] *Introduction to the Second Edition*, and Section 12.
[2] Strictly : "Something has the predicative property ϕ."
[3] As was pointed out by Ramsey : *The Foundations of Mathematics*, p. 36.
[4] They do not always use it in this way, but this way is the only one which Mr. Smart considers.

" Similar criticisms apply also to the ramified theory of types. Clothed in symbols it looks natural. For '$(\phi).F(\phi,x)$' reminds us of '$\int_0^a y\,dy$' x, for example. The former is no more a function of ' ϕ ', we are ready to be told, than the latter is of ' y ' . . . It is all right so long as we don't think about it." (p. 44).

It may be that Mr. Smart is merely reiterating his objection to expressions of the form ' $F(\phi,x)$ '. But he seems to suggest that Whitehead and Russell are wrong in their denial that the expression is a function of ' ϕ ', and that this denial constitutes the ramified theory of types. This is a mistake. The expression is not a function of ' ϕ ' since we do not need to substitute for ' ϕ ' in order to obtain a proposition, and that this is so is independent of the ramified theory of types. What that denies is the legitimacy of the inference from ' $(\phi).F(\phi,x)$ ' to ' $F\{(\phi).F(\phi,x),x\}$ '.

Mr. Smart's criticism of the *Principia Mathematica* example " Napoleon had all the qualities of a great general "[1] I find even more difficult to understand, and I may not have caught the point of his argument at all. He has two complaints : that the example is in the material mode of speech, and that the symbolism of Whitehead and Russell fails to make a distinction which, even in the material mode, is made in ordinary language : " It is *confidence* that is a quality of a great general, while the great general is *confident* ".

To take the latter point first : I cannot be sure what precisely is the distinction that he has in mind, but an analogous distinction *is* made in *Principia Mathematica*, where we read :

" If we put '$f(\phi!\hat{z})$' for ' $\phi!\hat{z}$ is a predicate required in a great general,' our proposition is

$$(\phi):f(\phi!\hat{z}) \text{ implies } \phi, \text{ (Napoleon).}"$$

It is true that the distinction is made by means of the " capped notation ", but there is no reason why, if Mr. Smart will not use it, Whitehead and Russell should not.[2] If, as Mr. Smart complains, " we are not clearly *told* how it would help to write ' $\phi\hat{x}$ ' instead of ' ϕ ' ", Mr. Smart himself does not tell us why he thinks we should need help at all. The distinction between the uses of the words ' confidence ' and ' confident ' is surely irrelevant to the ramified theory of types. But I may have missed his point.

[1] The example *should* read: "Napoleon had all the qualities that make a great general."

[2] Mr. Smart's curious reluctance to write his examples in the symbolism whose adequacy he is discussing has the result that the example he gives of a function " on the first rung of the ladder ", ' $\phi x \vee \psi x$ ' would if ' ϕ ' and ' ψ ' represent matrices be classified by Whitehead and Russell as functions not, as he claims, of the first, but of the second order. See *Principia Mathematica*. second edition, p. 163.

The claim that " Napoleon had all the qualities of a great general " is in the material mode of speech is easy enough to understand but not so easy to accept. Mr. Smart's supposed translation in the formal mode is neither a translation nor in the formal mode. It is not a translation since it is equivalent to the assertion that Napoleon had every quality of every great general, which entails that all the qualities of one great general are compatible with the qualities of every other (so that, for instance, no two great generals could differ in intelligence, or date of birth); the *Principia* example, on the other hand, claims only that Napoleon had every quality common to all great generals. The supposed translation is not in the formal mode, since it uses the word ' true '; it cannot therefore be a syntactical expression nor, consequently, be in the formal mode.[1]

It could, of course, easily be rewritten so as to be equivalent to the *Principia* example, but it seems obvious that no syntactical translation could be given. Mr. Smart may, of course, mean by " in the formal mode " no more than " in the metalanguage ". His attempted translation is, certainly, in the metalanguage, and it is therefore not surprising that, as he points out, his variables should take *words*[2] as their values. What is surprising is that Mr. Smart should consider this a refutation of the ramified theory of types. The theory classifies functions into orders; if we accept Mr. Smart's proposal that we should translate into the metalanguage sentences containing functions of higher order than the first, it is obvious that there will be no hierarchy of functions in our object language, we shall never " get off the first rung of the ladder ". But Mr. Smart gives us no reason why we should accept his inconvenient proposal, which entails our abandoning the higher functional calculus. Whether it would be possible to re-write the whole of mathematical logic in the way that he suggests I do not know, but, as is well-known, there are simpler ways to achieve rigour and to avoid the Paradoxes; Mr. Smart's proposal might be sufficient to do this, it is certainly not necessary.

Let me, in conclusion, stress that I have not been supporting the theory of types; I have merely argued that Mr. Smart's objections to it are invalid. It may be that, as he says, Whitehead and Russell have not found the right way of dealing with the logical Paradoxes, and I await with interest the alternative at which he hints; but valuable as this, no doubt, will be, Mr. Smart has failed to show that Whitehead and Russell's theory is either unnecessary or unintelligible.

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